



บริษัท พรซิชั่นชิพไรท์ เซอร์วิสเชส จำกัด

23/159 Moo 2 Thepkasattri Rd., Koh Kaew, Muang, Phuket 83000 Thailand.  
Tel: +66 7623 9113 Fax: +66 7623 9132 Email : pss@loxinfo.co.th  
[www.precision-shipwright.com](http://www.precision-shipwright.com)

S/Y Scorpio

Rig Survey

13 May 2011

This rig survey was conducted at the request of the owner, Henrik Lindblom , in Phuket, Thailand.

*Scorpio is a Nautor 43 ketch, built by Nautor, Finland in 1979.*

The main mast standing rigging, except forestay, and the mizzen cap shrouds are reported to have been replaced in 2003; I have been asked to estimate the cost for replacing the mizzen lowers and the main forestay. The forestay is fitted with a Harken roller furler.

Both the standing and some of the running rigging of Scorpio were inspected when the masts were out of the vessel. The wire used on the main mast is Dyform for the backstay and cap shrouds, and stainless steel, 1 X 19, left-hand lay for the lowers. The mizzen is all 1 X 19 right-hand lay. There is a certain amount of staining on the main mast wires and extensive rusting on the mizzen; 1 strand has rusted through. The majority of the terminals are Norseman swageless terminals in excellent condition but not all appear fully tightened.

The masts are anodized and there is minimal corrosion on the main but extensive corrosion on the mizzen. See "High priority" below.

The drum of the main halyard winch is missing so could not be inspected.

The chainplates inside the vessel were also inspected; there were signs of a leaks. Since the vessel is having the teak decks replaced, it would be a good time to inspect all plates where they pass through the deck; the area where most failures occur.

The lifelines were replaced end 2010 and are still in good condition

### High Priority

- Scorpio is now 32 years old and there are signs of leaks around several of the chain plates. It is my opinion that all chain plates be removed from the vessel and be inspected.
- Some of the many original wooden cleats still in service on Scorpio are beginning to split. If one of these cleats is used and breaks when a man is up the mast it could result in a fatal accident. It would be prudent to consider changing all these cleats.
- All Norseman fittings on the Dyform wire and 2 other Norseman terminals are only screwed together half way. They should be opened for further inspection (wrong cones or cones slipped on too far are possible installation errors).
- The third mast step from the top, starboard side, needs re-bolting in place.
- The mizzen mast has a serious corrosion problem: a hole right through in one place, under the paint on the wind generator, under stainless fittings, under the winches and possibly staining the cap shrouds. Firstly the cause of this corrosion should be found and then the damaged areas repaired.
- 1 strand of the mizzen port cap shroud is rusted through. This shroud needs to be changed and the starboard cap needs cleaning and re-inspecting.

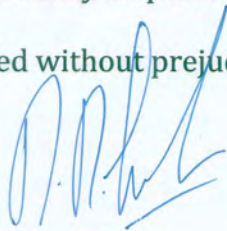
### The following items should also be noted

- A thorough cleaning of all the stainless would be beneficial ( and easy to do whilst the masts are out )
- Several lines are too big for the job they are doing. They chafe on the cheeks of the blocks, are hard to pull due to friction and are unnecessarily heavy. Suggest downsizing when renewing.
- One small block at the main mast head, aft side has a damaged sheave. This should be changed.
- The main halyard is wire/rope: the wire is damaged near the wire to rope splice. This halyard should be changed to avoid injuries to captain and/or crew.
- There is a certain amount of corrosion on all the mast winch bases. The winches should be removed, the areas inspected more closely and repaired as necessary. It would also be a good time to give all winches a much-needed service.
- One rusty bolt holding the wind generator bracket on the mizzen mast should be changed.
- The cars in the Harken Battcar system need rinsing and/or new Turlon balls.

The halyards were not pulled from the masts for inspection.

I personally inspected this vessel and the findings are true and correct.

Signed without prejudice,



David Samuelson

Date 13 May 2011

**ADDENDUM** (to survey dated 13 May 2011)

With reference to the 6 items in the above paragraph headed "[High Priority](#)":

- All chainplates were removed, inspected, found to be in good condition, polished and replaced.
- All wooden cleats have been replaced.
- Norseman fittings that "appeared" not screwed down were opened and inspected. The owner opted for changing all rigging on the mizzen mast and the mainmast forestay to be certain that the correct cones were used.
- The step has been secured.
- All corroded areas have been taken care of; the one hole was filled and a plate screwed over.
- All standing rigging on the mizzen mast has been changed.

With reference to the items in the above paragraph headed "[The following items should also be noted](#)":

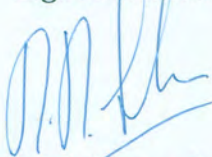
- All stainless, including the wires, have been thoroughly cleaned.
  - Several halyards have been replaced; including the wire/rope halyard.
  - All (4) sheaves at the head of the main mast were taken out and cleaned, one of them replaced.
  - All winches were removed and serviced and their bases cleaned and repaired as necessary. 3 winches (incl. the one for the main halyard) were replaced by new Harken Radial winches and the drums of the others (ex. head sail winches) were re-chromed.
  - The rusty bolt for the wind generator has been replaced.
  - The cars of the Harken Battcar system were taken off and rinsed and all Torlon balls were replaced.
- Other
- Folding mast steps were installed on main mast from spreaders to mast head.
  - The topping lift (incl. blocks) of the main mast has been replaced.

**Summary**

The rigging now appears to be in excellent condition.

I personally inspected all the abovementioned items and the remarks are true and correct.

Signed without prejudice,



David Samuelson

Date 11 January 2012